

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for transmitting data units from a node in a communications network, the node including a plurality of network interfaces, the plurality of network interfaces being associated with respective transmission queues, the method comprising:

identifying a first network interface of the plurality of network interfaces of the node for transmitting a first data unit;

subsequent to identifying the first network interface, storing the first data unit in a transmission queue associated with the first network interface;

subsequent to storing the first data unit in the transmission queue associated with the first network interface, identifying a second network interface of the plurality of network interfaces of the node from which the first data unit is to be transmitted;

determining if the second network interface is different than the first network interface; and
in response to determining that the second network interface is different from the first network interface, forwarding the data unit to the second network interface for transmission.

2. (Original) The method of claim 1 wherein the communications network is an ad hoc network.

3. (Original) The method of claim 1 further comprising: determining, prior to storing the first data unit, whether the first data unit is a multicast data unit.

4. (Previously Presented) The method of claim 3 further comprising: determining, when the first data unit is not a multicast data unit, a priority for the first data unit; and storing the first data unit in a sub-queue within the transmission queue associated with the first network interface based on the determined priority.

5. (Previously Presented) The method of claim 3 further comprising: determining, when the first data unit is a multicast data unit, a priority for the first data unit; and storing the first data unit in a sub-queue within a transmission queue associated with each of the plurality of network interfaces based on the determined priority.

6. (Previously Presented) The method of claim 3 further comprising: determining, when the first data unit is a multicast data unit, a priority for the first data unit; and storing the first data unit in a

sub-queue within a transmission queue associated with at least one of the plurality of network interfaces based on the determined priority.

7. (Previously Presented) The method of claim 3 wherein, when the first data unit is a multicast data unit, identifying the second network interface includes: identifying a next node to receive the first data unit from a list of next nodes, and identifying the second network interface based on the identified next node.

8. (Previously Presented) The method of claim 7, wherein in response to determining that the first network interface is the same as the second network interface, storing a copy of the first data unit in the transmission queue associated with the second network interface, and recording a current position in the list of next nodes.

9. (Original) The method of claim 7 further comprising: dropping the first data unit when no next node is identified from the list of next nodes.

10. (Previously Presented) The method of claim 1 further comprising: assigning a sequence number to the first data unit, and wherein the storing the first data unit includes: storing the sequence number with the first data unit in the transmission queue associated with the first network interface.

11. (Previously Presented) The method of claim 10 further comprising: in response to determining that the first network interface is different than the second network interface, storing the first data unit in a transmission queue associated with the second network interface.

12. (Previously Presented) The method of claim 11 wherein the storing the first data unit in the transmission queue associated with the second transmission interface includes: storing the first data unit in the transmission queue associated with the second transmission interface based on the sequence number assigned to the first data unit.

13. (Cancelled)

14. (Currently Amended) A network device comprising:

a plurality of transmission queues for storing data units;
a plurality of network interfaces associated with respective transmission queues and being configured to forward the one or more data units to other network devices; and

a forwarding module configured to:

receive a first data unit at the network device,

identify a first network interface of the plurality of network interfaces of the network device for transmitting the first data unit,

subsequent to identifying the first network interface, store the first data unit in a transmission queue associated with the first network interface,

subsequent to storing the first data unit in the transmission queue, identify a second network interface of the plurality of network interfaces of the network device for transmitting the first data unit,

determining if the second network interface is different than the first network interface, and

in response to determining that the first network interface is different from the second network interface, forward the first data unit to the second network interface.

15. (Original) The network device of claim 14 wherein the forwarding module is further configured to: determine, prior to storing the first data unit, whether the first data unit is a multicast data unit.

16. (Previously Presented) The network device of claim 15 wherein the forwarding module is further configured to: determine, when the first data unit is not a multicast data unit, a priority for the first data unit, and store the first data unit in a sub-queue within the transmission queue associated with the first network interface based on the determined priority.

17. (Previously Presented) The network device of claim 15 wherein the forwarding module is further configured to: determine, when the first data unit is a multicast data unit, a priority for the first data unit; and store the first data unit in a sub-queue within a transmission queue associated with each of the plurality of network interfaces based on the determined priority.

18. (Previously Presented) The network device of claim 15 wherein, when identifying the second network interface, the forwarding module is, when the first data unit is a multicast data unit, further configured to: identify a next node to receive the first data unit from a list of next nodes, and identify the second network interface based on the identified next node.

19. (Previously Presented) The network device of claim 18 wherein the forwarding module is further configured to, in response to determining that the first network interface is the same as the second network interface, store the first data unit in the transmission queue associated with the second network interface, and record a current position in the list of next nodes.
20. (Original) The network device of claim 18 wherein the forwarding module is further configured to: discard the first data unit when no next node is identified in the list of next nodes.
21. (Previously Presented) The network device of claim 14 wherein the forwarding module is further configured to: assign a sequence number to the first data unit, and wherein, when storing the first data unit, the forwarding module is configured to: store the sequence number with the first data unit in the transmission queue associated with the first network interface.
22. (Previously Presented) The network device of claim 21 wherein the forwarding module is further configured to: in response to determining that the first network interface is different than the second network interface, store the first data unit in a transmission queue associated with the second network interface.
23. (Previously Presented) The network device of claim 22 wherein, when storing the first data unit in the transmission queue associated with the second network interface, the forwarding module is configured to: store the first data unit in the transmission queue associated with the second network interface based on the sequence number assigned to the first data unit.
24. (Previously Presented) The network device of claim 15 wherein the forwarding module is further configured to: determine, when the first data unit is a multicast data unit, a priority for the first data unit, and store the first data unit in a sub-queue within a transmission queue associated with at least one of the plurality of network interfaces based on the determined priority.
25. (Currently Amended) A system for transmitting data units from a node in a communications network, the node including a plurality of network interfaces, the plurality network interfaces being associated with respective transmission queues, the system comprising:
- means for identifying a first network interface of the node for transmitting a data unit;

means for, subsequent to identifying the first network interface, storing the data unit in an transmission queue associated with the first network interface;

means for separately identifying, subsequent to storing the data unit in the transmission queue, a second network interface of the node from which the data unit is to be transmitted;

means for determining if the second network interface is different than the first network interface; and

means for, in response to determining that the first network interface is different from the second interface, sending the data unit to the second network interface for transmission.

26. (Currently Amended) A computer-readable medium containing a plurality of instructions that, when executed by at least one processor, causes the at least one processor to perform a method for transmitting data units in a communications network, the method comprising:

identifying a first network interface of a plurality of network interfaces of the node for transmitting a data unit;

subsequent to identifying the first network interface, storing the data unit in a transmission location corresponding to the first network interface;

identifying, after storing the data unit, a second network interface of the plurality of network interfaces of the node from which the data unit is to be transmitted; and

determining if the second network interface is different than the first network interface;

in response to determining that the first network interface is different than the second network interface, forwarding the data unit to the second network interface for transmission.

27. (Currently Amended) The computer-readable medium of claim 26 further comprising: determining whether the data unit is a multicast data unit, and wherein the method further comprises: determining, when the data unit is a multicast data unit, a priority for the data unit, and

store the data unit in a transmission location associated with at least one of the plurality of network interfaces based on the determined priority.

28. (Currently Amended) A method for transmitting data units from a node that includes a plurality of network interfaces, comprising:

upon one of receipt of a data unit by the node and generation of a data unit by the node, identifying a first network interface of the plurality of network interfaces of the node from which to transmit the data unit to another node;

determining that the node is ready to transmit the data unit;

subsequent to identifying the first network interface, and in response to determining that the node is ready to transmit the data unit, identifying a second network interface of the plurality of network interfaces of the node to transmit the data unit;

determining if the second network interface is different than the first network interface; and

in response to determining that the first network interface is different than the second network interface, transmitting the data unit via the second network interface.

29. (Previously Presented) The method of claim 28 further comprising: storing the data unit in a transmission queue associated with the first network interface; and subsequent to identifying the second network interface, storing the data unit in a transmission queue associated with the second network interface.

30. (Previously Presented) The method of claim 28 further comprising: determining whether the data unit is a multicast data unit; and storing, when the data unit is a multicast data unit, the data unit in a transmission queue associated with each of the plurality of network interfaces.

31. (Original) The method of claim 28 wherein the data unit is a multicast data unit, and wherein the method further comprises: storing, for each neighboring node, information indicating whether the multicast data unit has been transmitted to that neighboring node.

32. (Currently Amended) A network device comprising:

a plurality of network interfaces configured to transmit data units; and

a forwarding module configured to:

upon one of receipt of a data unit by the network device and generation of a data unit by the network device, identify a first network interface of the plurality of network interfaces of the network device to transmit the data unit to another network device,

determine that the network device is ready to transmit the data unit;

determine, subsequent to identifying the first network interface and in response to determining that the network device is ready to transmit the data unit, a second network interface of the plurality of network interfaces of the network device to transmit the data unit, and

determine if the second network interface is different than the first network interface;

in response to determining that the first network interface is different than the second network interface, forward the data unit to the second network interface for transmission.

33. (Previously Presented) The network device of claim 32 further comprising: a plurality of transmission queues associated with respective network interfaces of the plurality of network interfaces and configured to store data units for the associated respective network interfaces.

34. (Previously Presented) The network device of claim 33 wherein the forwarding module is further configured to: store the data unit in a transmission queue associated with the first network interface, and subsequent to forwarding the data to the second network interface, store the data unit in a transmission queue associated with the second network interface.

35. (Canceled)

36. (Previously Presented) The network device of claim 32 wherein the plurality of network interfaces are configured to transmit the data units via a wireless link.

37. (Original) The network device of claim 32 wherein the data unit is a multicast data unit, and wherein the forwarding module is further configured to: store, for each neighboring node,

information indicating whether the multicast data unit has been transmitted to that neighboring node.

38. (Currently Amended) A computer-readable medium containing a plurality of instructions that, when executed by at least one processor in a node that includes a plurality of network interfaces, causes the at least one processor to perform a method for transmitting data units in a communications network, the method comprising:

upon one of receipt of a data unit by the node and generation of a data unit by the node, identifying a first network interface of the plurality of network interfaces of the node to transmit the data unit to another node;

determining that the node is ready to transmit the data unit;

subsequent to identifying the first network interface and in response to determining that the node is ready to transmit the data unit, determining a second network interface of the plurality of network interfaces of the node to transmit the data unit;

determining if the second network interface is different than the first network interface; and

in response to determining that the first network interface is different from the second network interface, transmitting the data unit via the second network interface.

39–44. (Canceled)

45. (Currently Amended) A method for transmitting data units from a node in a communications network, the node including a plurality of network interfaces, the method comprising:

placing a data unit in a transmission queue associated with a first of the plurality of network interfaces of the node;

determining that the data unit has reached a head of the transmission queue;

identifying, when the data unit reaches [[a]] the head of the transmission queue, one or more second network interfaces of the node from which the data unit is to be transmitted; and

placing the data unit at a head of the transmission queue associated with each of the second network interfaces for transmission.

46. (Previously Presented) The method of claim of claim 45, wherein placing a data unit in a transmission queue comprises storing a copy of the data unit in the transmission queue.

47. (Previously Presented) The method of claim 45, wherein placing a data unit in a transmission queue comprises storing the data unit in a memory and storing a placeholder in the transmission queue.
48. (Previously Presented) The method of claim 45, wherein identifying one or more second network interfaces from which the data unit is to be transmitted comprises identifying neighboring nodes to receive the data unit.
49. (Previously Presented) The method of claim 48, wherein identifying one or more second network interfaces from which the data unit is to be transmitted comprises identifying one or more network interfaces by which the identified neighboring nodes can be reached.
50. (Previously Presented) The method of claim 48, comprising transmitting the data unit to the identified neighboring nodes.
51. (New) The network device of claim 14, wherein the second network interface transmits the data unit over an ad hoc network.
52. (New) The system of claim 25, wherein the second network interface transmits the data unit over an ad hoc network.
53. (New) The computer readable medium of claim 26, wherein the second network interface transmits the data unit over an ad hoc network.
54. (New) The method of claim 28, wherein the second network interface transmits the data unit over an ad hoc network.
55. (New) The network device of claim 32, wherein the second network interface transmits the data unit over an ad hoc network.
56. (New) The computer readable medium of claim 38, wherein the second network interface transmits the data unit over an ad hoc network.
57. (New) The method of claim 45, wherein at least one of the second network interfaces transmits the data unit over an ad hoc network.